

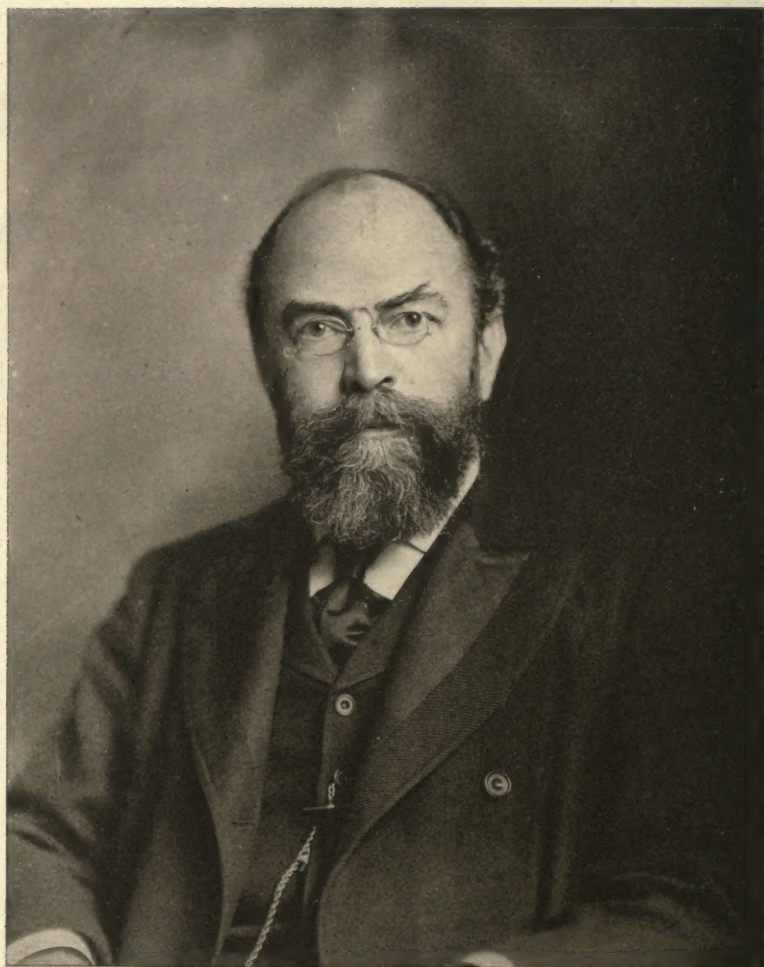
Nathaniel Wright Lord
* A MEMORIAL *

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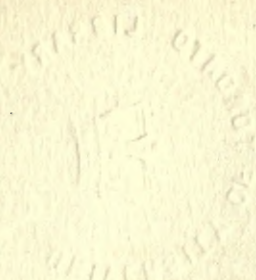
NATHANIEL WRIGHT LORD

A MEMORIAL

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INTRODUCTION

ON May 23rd, 1911, the mantle of sorrow was again laid on the Ohio State University by the sudden death from heart failure of Professor Nathaniel Wright Lord.

Professor Lord was born in 1854, received his elementary training in the Hughes High School, Cincinnati, and in 1876, was graduated from Columbia University, as a mining engineer. He came to the Ohio State University in 1877, and was made Director of the School of Mines, in 1878. When the College of Engineering was re-organized, in 1896, with the School of Mines as a component part, Professor Lord was chosen to fill the newly created position of Dean of the College. Here he displayed his ability as an organizer and, under his masterful guidance, the plans and policies of the College were laid along broad and scholarly lines.

Although he relinquished the position of Dean in 1901, owing to the pressure of other duties, he continued to serve the University as Professor of Metallurgy and Mineralogy until his death, and his advice and counsel in all matters pertaining to the growth of the University were always sought by his colleagues.

As a recognition of the services rendered to the University by Professor Lord, during the thirty-three years of his connection with it, those of the

Alumni who were immediately associated with him, or were his students, held a memorial service at the University on Tuesday, June 11th, 1912, to pay a public tribute to the memory of the man and professor whom they loved.

The service consisted of three parts:

First, three addresses on the life and services of Professor Lord; second, the unveiling of a portrait of Professor Lord, presented by the alumni and students of the School of Mines and accepted on behalf of the University, and third, the dedication of Lord Hall.

In order that the addresses made on this occasion might be preserved, the University authorized the publication of this volume, which contains besides the addresses, the memorial adopted by the University Faculty, and a bibliography of Professor Lord's writings.

NATHANIEL WRIGHT LORD

As a Mining Engineer.

HONORABLE JOSEPH A. HOLMES,

Director of the Bureau of Mines,
Washington, D. C.



AT no time has the position of the engineer and his importance as a factor in the welfare and progress of nations been so fully recognized as it is today. He no longer merely carries out instructions. He is now the man who proposes the things that ought to be done; who works out the plans and processes; and then turns to the financier and asks him to provide the necessary funds.

And it should not be otherwise. Whether we study the early monuments, like the pyramids of Egypt, with their massive simplicity, or the great complex architectural monuments of today; whether we study the harbor improvements and the temples and other engineering works of the ancient Greeks, or the later temples, theatres, aqueducts, drainage canals, street and highways of Rome, or the tunnels, aqueducts and sky-scrapers of New York; whether we study the crude transportation facilities of the ancients, or our own steamships, railways, and flying machines; whether we study the ancient system of signalling by fires on the hill tops, or the transmission of messages through the telegraph and the telephone and by wireless telegraphy; in all this achievement and progress we see the thought, plans, calculations, and the constructive work of the engineer.

Or if we consider for a moment the United States at its beginning, a little more than a hundred years ago; with its simple rural life, with its sparse population of less than four millions; with its few small, scattered cities and towns; with its poorly planned and poorly maintained public roads, and with a

crude agriculture barely sufficient for its own needs—a country without a mining industry, and without factories—and compare that with the United States of today, with its population of ninety-five millions of people, with its great cities, its splendid harbors, its public highways, its 235,000 miles of railways, with its great manufacturing enterprises, with a mining industry the greatest and most complex in the world, with an agriculture not only feeding its own population but exporting annually products valued at \$370,000,000, and with other varied industries which, besides yielding a sufficient supply for home consumption, yield annually for export, products valued at \$1,340,000,000; with its one and one-half million miles of telegraph, its thirteen million miles of telephone lines, and even more remarkable, its wireless messages, and flying machine,—as we compare the United States of 1776 with the United States of today, we see something of the contribution the engineer makes toward our national development. For he has planned and directed the expenditure of more than three-fourths of the labor and four-fifths of the capital, and has created the machinery and developed the resources that have wrought this great national transformation.

Modern engineering no doubt began with the development of the means and facilities for offensive and defensive warfare; and military engineering has continued to grow in importance as a factor in military affairs. But this is now only one, and by no means the largest, branch of engineering. Follow-

ing the development of the military engineer came the civil engineer, the mechanical engineer, the mining engineer, the electrical engineer, the chemical engineer, the metallurgical engineer, the sanitary engineer, the agricultural engineer, and others; but the fundamental basis of all these branches of engineering is the power of the trained man to think out and work out his constructive operations; to lay plans and to do things; to determine what ought to be done, how it can be done, and then to do it.

I have been asked to speak especially of Professor Lord as a mining engineer. He was a mining engineer, worthy of his profession, a mining engineer by education and by large, successful professional experience. In the same sense, though to a less degree, Professor Lord was a chemical engineer, a metallurgical engineer, a sanitary engineer, and an agricultural engineer.

As an agricultural engineer Professor Lord, for many years not only gave good advice through the agricultural experiment station work, but during the last five or six years before his death he undertook to put into actual practise the knowledge which he had gained and the advice which he had been giving.

He purchased a worn out farm with poor soil a few miles distant from Columbus, and in a few short years through the use of his knowledge and by putting into practical operation the fundamental scientific principles, he converted this poor farm into one of the best in the community.

As a chemical engineer he was the pioneer in this country in developing the possibilities of cement manufacture from blast furnace slag. His investigations made it possible to overcome the many obstacles which at that early date (1886 to 1887) stood in the way of the development of that branch of the industry. He also did a large amount of valuable work in the improvement of boiler waters for the locomotives of railway companies and the power plants of industrial corporations; and in this he was able to demonstrate a number of chemical reactions occurring at high temperature in the watertubes and flues of boilers which were previously neither recognized or understood.

As a chemical engineer in the fuel investigations for the General Government, he improved the methods of testing coals which he had long before aided in developing; and also in developing new methods which rendered service of great value to the chemists and mechanical engineers of the country.

As a metallurgical engineer for many years he studied carefully the iron and steel industry in Ohio and taught the iron founders many valuable lessons. He called their special attention to the conditions prevailing in the low grade iron ore smelting in Ohio, as directly paving the way to the production of the high-silicon alloys of iron, which were first produced in Ohio and in the United States by one of his pupils.

Similarly his work lead to improvements in the handling of the phosphoric ores and the development

of high phosphorous alloys of iron, which now find various uses in the industry; and in many other ways while connected with the University and with the State Geological Survey he contributed by investigation and by advice to improvements in the metallurgical and miscellaneous mineral industries in Ohio and, indirectly, to those in the country at large.

As a sanitary engineer Professor Lord made many examinations of the waters in the State and through his good advice to the State Board of Health upon this and other matters, he contributed largely to the improvement of the health conditions of Ohio.

As a mining engineer he made valuable contributions to the coal mining industry of Ohio through his investigations of the coal fields, including not only methods of mining, but the methods of handling and utilizing coal. He was always dreaded by the fake promoters in Ohio; and one of his most valuable characteristics as an engineer was his caution in accepting statements the correctness of which had not been demonstrated; and in warning his professional clients against wasting their funds in plausible investments where a demonstrable basis could not be discovered. On one occasion, for example, a number of Ohio citizens were disposed to expend large sums of money in recovering the gold from the glacial gravels. Professor Lord persuaded them first to invest a few hundred dollars in the making of simple tests and demonstrated to their satisfaction, that while they might secure a million dollars in gold from these gravels, it would cost them three millions to get the

one million. By the exercise of a similar wise caution, he early won the confidence as a mining engineer by the fact that he was unwilling to make costly experiments in engineering at the expense of his clients, when the possibility of returns was so doubtful that he was unwilling to invest his own funds in the experiment.

Professor Lord began his career as a mining engineer immediately after graduating from the School of Mines by a year's experience in Nicaragua as chemist and director of a gold mining company. During his long connection with the Ohio State University, from 1877 to 1911, he had varied experience as an engineer in different branches of mining—the extent of which experience was only limited by the fact that he would never allow his professional engineering work to grow to such an extent as to interfere to the least degree with his services as an instructor in the University. In his later professional work as a mining engineer he was primarily interested in conserving the coal supply of the country and in safeguarding the lives of the miners through the introduction of less wasteful and safer mining methods.

But I prefer to think of Professor Lord as an engineer, in the same sense that Darwin and Wallace were naturalists. He laid the foundations for his engineering work when as a student at the Columbia School of Mines, he acquired a thorough training in chemistry, physics, mathematics, geology and mineralogy. And in later and maturer years, whether

he was endeavoring to solve a professional problem for a mining client, or a water problem for the State Board of Health, or a fertilizer problem for the Agricultural Experiment Station, or to demonstrate the identity of a coal vein for the Ohio State Geological Survey, or some fuel problem for the Federal Government, he was generally able to grasp and solve the problem directly and quickly, for the reason that his attainments in the sciences upon which engineering progress is dependent, namely, chemistry, physics, mechanics, mathematics, and geology, were such as to enable him to comprehend all sides of his problem, and to understand, much more clearly than most men, what were the real problems at issue and how best to solve them.

Darwin's success as a naturalist was due not only to his remarkable power of accurate observation, but also to his acquaintance with, and insight into the fundamental principles of biology. With Lord as an engineer it was his mastery of the fundamental principles of chemistry and physics and mechanics.

The average engineer, by the time he comes to be known as an engineer, has already forgotten most of his chemistry and his physics, his mathematics and his geology. But this was not true of Professor Lord. His familiarity with the basal facts in all these subjects was such that when he undertook to solve an engineering problem, he thought out the solution in the language of chemistry and physics as easily as a thorough linguist would think out a problem in etymology, in the language from which the word was derived.

And so Professor Lord was an engineer in the broadest sense; and his success, to which many can testify, in mining, in metallurgy, and in the miscellaneous mineral industries, in agriculture, in sanitation, was due not only to his intellectual ability, his fundamental honesty, his energy, and his fund of hard common sense, but also to his thorough mastery of those branches of science upon which all engineering development must rest, and on the basis of which future engineering progress must depend.

The part of Professor Lord's scientific work with which I am personally most familiar was that in connection with the Government fuel investigations initiated at the St. Louis Exposition in 1904. This work was entrusted by Congress to the United States Geological Survey, and by the authority of the Director of the Survey it was organized under a committee consisting of Messrs. E. W. Parker, M. R. Campbell and myself. Professor Lord's pioneer work in this country on the chemical and calorimetric investigations of fuels was already well known. His paper on "The Calorific Value of Certain Fuels, as Determined by the (Mahler) Calorimeter," published in the Transactions of the American Institute of Mining Engineers for 1897, and his paper on "The Valuations of Coals," given before the American Association for the Advancement of Science at its Boston meeting in 1898, had attracted attention throughout the country. It was natural, therefore, for us to appeal first to Professor Lord for advice and co-

operation in determining upon the men and the methods for carrying forward the investigation into American fuels which Congress had authorized; and that we should ask him to direct that part of this work which was most closely associated with his professional experience.

Ever ready to help a worthy cause, Professor Lord entered into this investigation with interest and enthusiasm. He aided us in selecting other men and the equipment, and in planning all of the investigations. He gave his personal supervision, as far as the demands of the University permitted, to the chemical side of the investigation, co-operating with Professor Breckenridge of the University of Illinois and Professor Fernald of Washington University, to whom were assigned the mechanical engineering problems, his work extending from the beginning in 1904 until his untimely death in 1911.

During that period we often acted on Professor Lord's suggestions; we always asked his advice; we never decided upon any new important plan or line of investigation until after consulting him. One and all, we recognized and trusted the extent and accuracy of his information, the sincerity of his purpose, the frankness and soundness of his advice, the earnestness and unselfishness of his good will.

One of the chief objects of these fuel investigations was to develop simpler and cheaper methods of testing fuels; and we were often astonished at the accuracy with which Professor Lord, from the chemical and calorimetric data determined by him, could pre-

dict the behavior of a given coal in a given type of furnace equipment. He naturally valued highly the laboratory work on fuels; but he always insisted that this laboratory work was valueless unless the entire history of the sample under investigation, and the relation of that sample to the coal field were known. He, therefore, joined with the mechanical engineers and the geologists in insisting that the first thing to be done in connection with such investigations was to study the coal beds in the field, and to collect samples at such points and in such manner as to make them thoroughly representative of the bed from which they were collected. After obtaining such samples his purpose was to make such laboratory determinations as would give accurate results and show the relation of these results to actual furnace trials.

It was in connection with these fuel investigations that the President of the United States appointed an advisory board of distinguished consulting engineers. Professor Lord was always an interested, an interesting and valuable member of this advisory board; and although, in his modest way, he always insisted that he attended the meetings of the board to learn from others, yet his own advice concerning the general plans for these investigations was always asked and generally followed. The chemical analyses of the different types of coal made during his connection with this Government fuel work, have been assembled and are now being published. The volumes now in press will constitute a monument to

the zeal and intelligence with which the chemical branch of these investigations was pushed forward under his direction.

Several important lessons are to be learned from Professor Lord's career:

One of these is a lesson for the University, namely, that its teachers who have to do with those branches of science that relate to the industries, should not be confined too closely to their class room work. They should be allowed to do a certain amount of private professional work, perhaps limited to an aggregate of three or four months of each year, at such times as would least interfere with their work as instructors. In this way they will be brought in practical contact with the industries, and the result will be increased efficiency in the instruction and increased confidence on the part of both the teacher and the student, and those in charge of the industries. It will bring students to the University and will secure these students positions in the industries. Of course, this system must be properly safeguarded or abuses will develop. And as one of these safeguards, the University should pay to such men sufficiently large salaries to render this outside work unnecessary as a part of their essential income. I believe it to be one of the great defects in our modern college educational system that so large a proportion of the teachers have had no experience in the actual industries or in the practical affairs of the country.

Not long ago the trustees of the Carnegie Foundation were asked whether they would consent to

an arrangement by which a professor of chemistry in one of our prominent universities could be given a five-year leave from the university to take charge, during this time, of the work of an important government laboratory for investigations, without thereby losing his eligibility for a retiring pension when retiring from the university to which he was to return at the end of the five-year leave of absence. The inquiry was answered in the negative, and while I have neither the right nor the inclination to criticize this decision, a careful study during the past ten years, of the character and results of the teaching work at many of the larger universities of the country, leads me to the belief that the Carnegie Foundation could in no other way contribute more to the efficiency of university instruction in science and engineering than by requiring, as a condition of eligibility for its benefits, that every applicant for a retiring pension from any department of science or engineering, must during his 30 years' connection with university work, have spent at least five years, of his time, actively participating in the work of the industries which involve the application of the principles he is ordinarily employed to teach.

I believe that all parties familiar with the facts will concede that Professor Lord's marked success and influence as a teacher was largely increased by his contact with the mining and metallurgical industries and with the outside public. He had a large fund of information that always aroused the interest and confidence of his students, and this information

he could obtain in no other way than by practical experience. At the same time, with Professor Lord, as should always be the case, his first interest and his first duty was to the University as a teacher; and his many offers of outside professional work were accepted or declined primarily on the basis as to whether or not their acceptance would or would not conflict with his duties as an instructor in the University.

There is also an important lesson here which both the University and the State of Ohio should learn. It is not given to any University or any state to have in its service or within its borders at one time many such men as Professor N. W. Lord and the late Professor Edward Orton, for so many years the State Geologist and Professor of Geology at the University; and when any State has in its service one or more such men, they should be relieved of the drudgery of routine, and should be supplied with every facility necessary to enable them to render the best and the largest possible service. Every dollar thus invested will be repaid more than an hundred fold.

Another important lesson for both the State and the University to learn from Professor Lord's career is the nature of problems with which he has been associated for more than a quarter of a century.

Ohio's mineral resources are not inexhaustible. Indeed, the supply is limited; the demands upon these resources will increase rapidly while the supply of crude materials will diminish rapidly and there can

be no new supply to take the place of what has been consumed. In consequence of the limited supply and the rapidly increasing rate of consumption, some of the State's most important resources may be exhausted while the State is yet in its infancy. And unless there is careful and efficient management on the part of those citizens who are most actively consuming these resources, the time will come, and it may not be far distant, when the people of Ohio will find that their expenses are increasing more rapidly than their productive capacity.

The possibility of improving this situation must depend upon the development of increasingly greater efficiency and care in the utilization of the State's resources; and this is wherein the University should help and should guide the people of the State, by spreading information as to what is needed and by supplying the young experts trained in the technical processes necessary to enable the people of Ohio to use these resources with greater efficiency. But the University can do its part in this great work only in proportion as the State provides the necessary funds for its use.

In relation to these matters Professor Lord's career and his success in developing more efficient methods and less wasteful practises in the industries is full of encouragement. He was intensely interested in the welfare of the Ohio State University, and in the welfare of the State of Ohio. He often pointed out the dangers to health from the pollution of streams; the

danger to the State's future welfare from the wasteful manner of mining and using coal which prevailed, and urged the adoption of better methods. He was intensely interested in the development and use of more efficient methods for burning coal; and in better regulations for safeguarding the lives of the miners connected with the coal mining industry in Ohio, and throughout the country.

Another lesson which we must not overlook is that Professor Lord, as a teacher, fostered the industrial and educational progress to which he was devoted, and the training of engineers, by so inspiring his students with an ambition to do good work that they cannot fail to perpetuate the work which he began. And here again is the difference between a teacher who teaches by rule of thumb and a teacher, like Professor Lord, who draws his inspiration direct from the living, moving and developing world outside the class-room, and imparts the interest and the enthusiasm he gains to all his students.

By his success as a professional engineer, Professor Lord has taught us the value of a thorough training in the fundamental branches of learning upon which engineering is based. And in discussing these problems with him, from time to time, I have been much impressed with what I believe to be the correctness of his view, that as part of a student's training in engineering there should be always a sufficient amount of practical work carried on to enable the student to keep constantly in mind the applications of theory to practise. This would require that

the student, while still a student, should make such practical use of his chemistry and physics, mathematics and geology, that these would always remain fresh in his mind and available for use in his subsequent efforts to solve large engineering problems. Professor Lord himself possessed, and always recommended for other engineers, not only this thorough university preparation in the fundamentals, but a carefully acquired knowledge of details in applying these fundamental studies in engineering practise.

In another way has Professor Lord set engineers a good example. In endeavoring to solve any engineering problem, he always brought to bear upon it the best data available; but he also always endeavored in solving such problems *to add* to the sum of our existing knowledge on the subject. He had something of Darwin's instinct for seeing the meaning of things and applying that meaning to the solution of new problems. He was quick to recognize the limits of existing knowledge concerning any engineering problem; and it was his constant endeavor to extend these limits.

Perhaps even more important were the human side of Professor Lord's life and work and his personal relations with people. He governed people more by the love and respect with which he inspired them, than by conscious acts of discipline, tho he will always be remembered as a stern and strict disciplinarian. He possessed to an unusual degree the ability to develop confidence, harmony and co-operative efforts among his associates and em-

ployees. One of his favorite sayings was, "I want not merely a man with whom I can get along, but I want a man with whom I can get along and be happy," and his actions towards and his treatment of his associates were so consistently fair, impartial and generous that they in their turn could not be otherwise. Thus the atmosphere of his laboratory was always a happy and congenial one, where bickering and jealousy were unknown, and where the golden rule formed the actual guiding principle.

In his management of our Government laboratories for fuel investigations there were no posted rules; none were needed; it was easy to read in the words and actions of his assistants the following principles:

(a) There are always two sides to a question, your side and the other fellow's side; you will understand your side better if you also understand the other fellow's side;

(b) Do not blame the other fellow until you are quite certain that the blame for any failure should not rest on your own shoulders;

(c) Be always frank and honest with the other fellow, and always just as frank and just as honest with yourself.

These were some of the principles that led every person who knew Professor Lord to love and respect him as a man, and to admire him as a teacher, as a chemist, and as an engineer.

NATHANIEL WRIGHT LORD

As a Teacher.

MR. WILLIS J. ROOT, E. M. '85.
Superintendent, Carnegie Steel Company,
Columbus, Ohio.

THE students of Professor Lord admired him because of the high grade of his scholarship, his great mental strength and that analytical quality of mind which enabled him to grasp and analyze intricate problems without apparent effort. We admired him because of his industry and devotion to his work of teaching and investigation. We admired him because he was honest and conscientious and always watchful of the welfare and development of students under his care.

We admired him because of his abhorrence of all sham display and the use of personal influence in gaining position, other than that influence which comes as the result of patient hard work and high personal integrity. No student who was industrious and willing to work ever had trouble with Professor Lord. He was a friend of the poor boy and the rich boy alike. Wealth made no difference to him, but it was necessary that the boy be industrious, willing to work, and possessed of a high sense of honor if he ever expected to win Professor Lord's approval.

We admired him because he believed in giving an honest day's work for an honest day's pay. We believe that this is the basic idea, the development of which is essential to the production in later years of respected citizenship. A very large proportion of our commercial, industrial, social and political troubles would at once disappear if every one were willing to give an honest day's work for an honest day's pay.

We loved Professor Lord, because of his intimate personal qualities as a man.

He loved his family. Home ties were very dear to him. During the earlier years of his life his parents, sister and brother were always first in his affections. Later in life after his marriage, his great affections were merely extended; he loved none less in order to love others more. The love which he bore his dear old mother was most characteristic and beautiful.

He was loved by his personal friends, because everyone knew that his friendship was real and lasting; as least so long as the recipient measured up to the required standards.

He was loved by his business and professional friends and associates, because of his courage and honesty in presenting things as he saw them, and his open-mindedness and willingness to be convinced, if he were in the wrong.

In his University life he was loved by the student body and faculty, because whatever the occasion might be, Professor Lord could always be relied upon to be upon the side of justice and honor. If a student had committed some minor error or indiscretion, Professor Lord never forgot that he himself was once young and inexperienced; and he championed the cause of many a delinquent and saved him from embitterment or disgrace. He knew how to temper justice with mercy and yet to bring about real penitence in the heart of the evil-doer.

We mourn Professor Lord because in him we have lost a friend who was near to us during the formative period of our lives, and who shaped our destinies in ways we can but imperfectly realize. The Alumni from the School of Mines mourn him because his counsel and advice was always willingly given to assist in the solution of the problems which are constantly coming up. The older members from the Alumni of all departments in the University mourn his loss, because they realize that it marks another inroad in that noble body of men who made up the early faculty of the University: Orton, Townshend, McFarland, Robinson, Tuttle, Millikan, Brown, Mendenhall, Thomas, Norton and Scott. The composite judgment of these men shaped to a very large extent the early policy of the University, and made its present strength and influence possible.

But one class of students found favor with these men. It made no difference whether rich or poor, their students must bring with them a reasonable intelligence, a willingness to work and a high sense of personal honor. With these attributes to meet the requirements of a rigorous college course of study without undue exertion and fatigue, with a family training that taught them to work, with their future dependent wholly upon their own efforts, with a personal integrity and sense of honor that would carry them safely past the ordinary temptations and pitfalls of life, you have the quality of manhood which they sought. From such students, under the

guidance of such a faculty, like the man whose loss we mourn today, we may expect our very best citizenship to be developed.

We believe in the character and intelligence of the people of the State of Ohio. We believe there are thousands of boys meeting these requirements, and that it is a sound policy for the State to undertake their higher education and training. We do not believe that the State is justified in undertaking the education of subjects less worthy. These were the doctrines of Professor Lord, and we admired him and loved him for them.

Death has inflicted upon us an irreparable loss in taking from the University a teacher in the prime of life, an earnest and ardent advocate of these high ideals, who believed that the distinguishing feature of the University should be the high quality of its graduates, and the distinguishing feature of its faculty, the high quality of its instruction and influence.

NATHANIEL WRIGHT LORD

As a Colleague.

DEAN GEORGE B. KAUFFMAN,

College of Pharmacy,
The Ohio State University.

AS a friend and colleague, I was associated with Nathaniel Wright Lord for more than twenty-five years. They were years crowded with evidences of his earnestness of purpose, his strength of character and his kindliness of heart. There are many in this hall at the moment who have in mind some trait of his character or some incident of his life which brings him fresh to mind, and that fact lightens my task.

It will be difficult in the few moments allotted to me to so choose my words as to do justice to this phase of his work, namely, his influence as a colleague. I use the word "work" premeditatedly and with emphasis. I know of no one here who has come into close touch with him as a colleague who will hesitate to bear testimony to the uplift of his influence and its developing power.

A little less directly perhaps, but forcefully and effectually he gave trend to our thoughts, and led, simply by being the man he was, so that many of us who were never enrolled on his books as students have profited greatly by his teachings.

It is said that the greatest legacy a man can leave behind him is the investment he has made in the lives of those about him, giving of his own capital for the development of their resources, or contributing the seed thought for their cultivation and harvesting.

Men of strong character, whether they consciously will or no, exert an influence which reaches beyond their immediate associates and their own gen-

eration, and which impresses itself on future thought and action beyond our ability to compute.

Such a man of strength was Nathaniel Wright Lord. He seemed to have no conscious care about impressing himself on other people. Independent to an unusual degree in thought and action he contented himself with following the laws of his own being, and keeping true to his convictions, but with no effort to force these convictions upon others. Like the great tree which brings its seed to maturity, leaving it to the forces of nature to scatter abroad, so he dropped thoughts, ideas, principles and convictions, which of their own force, strength and truth found fertile field.

Gifted with a mind naturally analytical in its bent and long trained in that direction by reason of the requirements of his profession, he gave to every subject which came to his attention much the same treatment which he gave to a sample submitted for analysis in his laboratory. It was this careful consideration which he gave to all questions which came to him that made his opinions and decisions so much prized and sought after by his friends and associates. He was the chief counsellor of many, and his conclusions and advice were usually followed with benefit. Without a carefully developed reason, he would give no counsel and hence the general correctness of his conclusions.

It must not be supposed from this that he coldly calculated results, because of all men I have known he put into these consultations the deepest feeling

and most heartfelt interest. Never, however, did he allow his interest to cloud his judgment. He could and did make the problems and troubles of his friends his own, and so evident was his interest, that relief came with that assurance of sympathetic understanding. It was this quality of comradeship which gave him a great part of the influence which he possessed.

His interest and the benefit of his counsel was not confined to those with whom he was directly associated, but was extended to all who sought his advice. With a certain degree of reserve and austerity, he was at the same time easy of approach and any, from the closest friend down to the most timid student, could get from him by the mere asking, the best he possessed.

Curiously indifferent as he was in regard to certain small conventionalities, he was at the same time keenly sensitive to criticism, either of opinion or conduct. He was always ready to defend his position but never without considering the right of others to hold opinions and to act in accordance with their right, and was openminded to change his own, should there be reason therefor.

He was severe in his judgment and ready to mete out the extreme penalty on occasion, but having done so the kindliness of his nature led him at once to seek palliating circumstances, reasons and excuses, through which the severity of the penalty might be modified.

In the affairs of the world he showed an ability to discern between that which possessed a basic merit, that which was doubtful and that which was false—very uncommon in men whose lives have been devoted to science. Insofar as he was concerned with commercial affairs and with men in commercial pursuits, this same habit of analysis of each and every proposition presented, gave him much the same standing outside the University that he held among his colleagues.

Democratic in principle, he was yet essentially an aristocrat; not of the aristocracy of birth or money, but of that of breeding and brains. He demanded that a man make good under the conditions surrounding him; if he could do that, he cared little what lay behind.

As a companion he was delightful; in conversation he was brilliant. His fund of general knowledge enabled him to talk intelligently and instructively on almost any subject and his ready command of language and his clearness of expression made him a mighty foe in argument.

With all his attainments he yet held a becoming modesty. He never presumed to know more of a given matter than the one whose special business it had been, but always deferred to what he thought should be superior knowledge. He was, however, quick to discern a weakness or falseness in action or statement. A sham he could not abide, and if I were to select any one trait of his character as most prominent, it would be to say that he stood for truth, sincerity and solid worth.

He took little pleasure in the ordinary or so-called social events of the day, yet so full was he of genuine social grace that he was able to make himself the center of an admiring circle and was always surrounded by a group of appreciative friends.

We miss greatly his presence among us, and as time goes on those who were nearest to him feel his absence more and more, but his memory, and the influence which he exerted, will last as long as this—the Institution which held his love and which received the greater part of his life and effort.

PRESENTATION OF THE PORTRAIT

On behalf of the Alumni and Students of
the School of Mines.

FRANK A. RAY, E. M. '87,
Professor of Mine Engineering,
The Ohio State University.

“One year ago—one little year,
And so much gone;
And yet the even flow of life
Moves calmly on.”

WITH the death of Nathaniel Wright Lord, our country lost one of its most useful citizens; our University one of its oldest and most distinguished professors; the field of science, one of its most enthusiastic and effective investigators; the mining boys, their beloved teacher.

Professor Lord was the soul of honor in all of his thoughts and actions. He was thoroughly genuine and hated sham of any kind. He possessed sound judgment, a keen, incisive, logical and analytical mind. He was thoroughly just in his judgment of others. He was thoroughly interested in all of the students who came to study under him. He held them strictly to their duties. Their shortcomings he handled in a manner to correct rather than to punish them, for he never once forgot that he once possessed the frailties of youth himself. His students all loved, honored and respected him. They all from far and wide sought his wise counsel. To me his loss is irreparable. I cannot yet realize that this good friend, comrade and distinguished associate is gone.

“While memory bids me weep thee
Nor thoughts nor words are free,
The grief is fixed too deeply
That mourns a man like thee.”

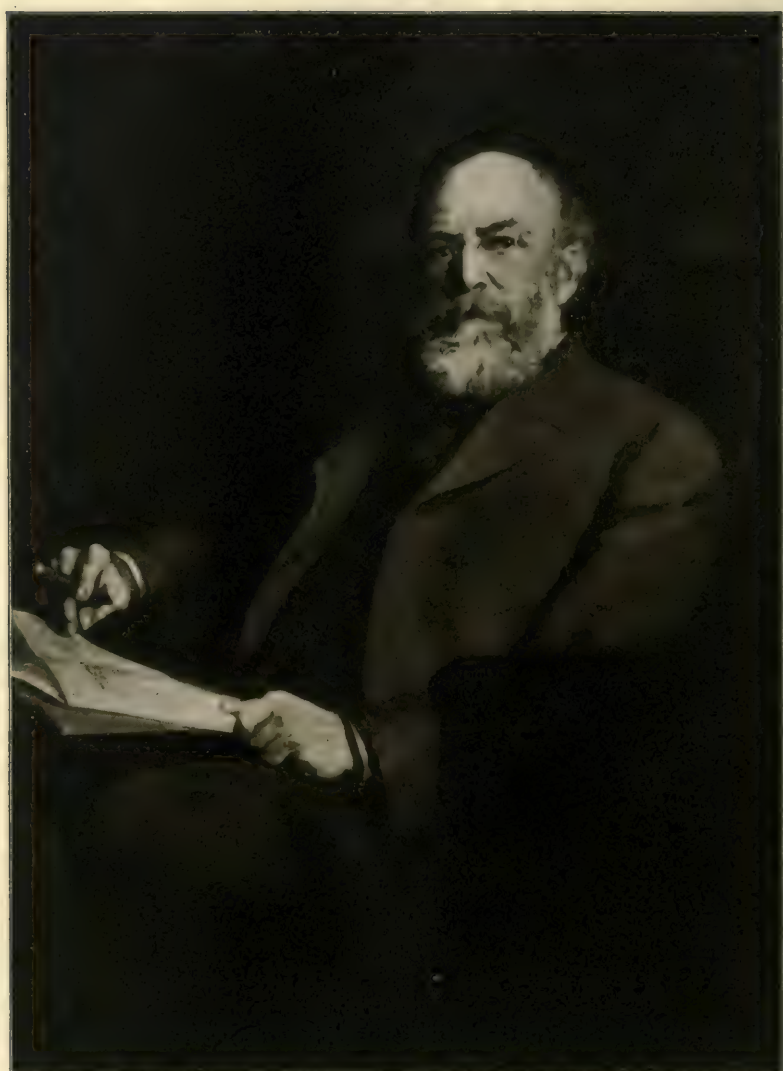
President Thompson! We, the Alumni and students of the School of Mines, blessed by the privilege of his influence and training, have united in an effort to honor, in a permanent way, the memory of this great and good man.

We give into your charge for the School of Mines this oil portrait, which is to be hung in the hallway of the building soon to be honored by the trustees with Professor Lord's name.

We wish to express our deepest feeling of appreciation for the tender courtesy shown us by the artist, Caroline A. Lord, in granting to us the right to give her work of love to the School of Mines, to be with us always as a comforting reminder of him when living, and as an encouragement for all to emulate his noble example.

The giving of this portrait is a mute expression of the love and honor we all hold in tenderest remembrance of one who is gone, but whose spirit and influence will live forever.

[At the conclusion of Professor Ray's address, the curtains slowly parted, disclosing the portrait. Several minutes were spent in silence, before the speech of acceptance was begun.]



ACCEPTANCE OF THE PORTRAIT

On behalf of the University.

PRESIDENT W. O. THOMPSON.



THE University is pleased to see the appreciation expressed today in these memorial exercises of one who spent his lifetime in the service of the University and the State, and became during the years of his service one of the most distinguished men in the country in the world of mining and metallurgy. Professor Nathaniel Wright Lord endeared himself to his students. They loved him because he first loved them. There was no interest closer to his heart than that of the student. His services as a member of the Faculty, both as Professor and Dean of the College of Engineering, have already been expressed by one of his colleagues. I may only say in addition that the trustees join most heartily in every word of appreciation that has been in the hearts of the audience or spoken by Dean Kauffman. Professor Lord's death was an irreparable loss to the University. He was not a copy of any other man, but was original and unique both in personality and in his methods. An unusually effective teacher, a man of thorough-going integrity of spirit, clearness of judgment, directness of method, he had the quality of getting at the heart of a question and stating issues with clearness and force.

It was inevitable that he should be a man whose judgment was respected and relied upon. However, I must not submit to the temptation to eulogize a man with whom I had twelve years of delightful fellowship and comradeship.

On behalf of the University I beg to assure the donors of this splendid portrait that the gift is ac-

cepted with sincere thanks and appreciation. Its presence in the University will keep fresh in our memories the sentiments of love and esteem that were begotten in a fellowship of service. We loved him when living. We honor his memory today. We shall cherish this reminder of the man, the professor and the comrade.

[After the exercises of the day, the portrait was removed to Lord Hall, and placed upon the east wall of the main corridor, near the office which Professor Lord had occupied. It is to remain there permanently.]

DEDICATION OF LORD HALL.

[At the close of the exercises in the Chapel, the audience, under the leadership of a corps of cadet officers of the University Regiment, formed in procession, marched slowly across the campus to the building to be dedicated, and assembled in the main corridor.

Before the building was formally dedicated, a bronze tablet, a reproduction of which appears in this volume, was presented. This tablet has a permanent place on the west wall of the main corridor of the building.]

PRESENTATION OF THE TABLET

On behalf of the Alumni and Students
of the School of Mines.

DEAN EDWARD ORTON, JR., E. M. '84.

College of Engineering,
The Ohio State University.

YOU have listened to the loving tributes which have already been paid to the memory of Nathaniel Wright Lord. Nothing which I can say can surpass them in completeness of knowledge, or in appreciation of the noble traits of the man himself, or in depth of feeling at his untimely loss.

We, the alumni and students, who had the privilege of working under Professor Lord, have in common a memory and bond of union which will never weaken while breath animates our frames. But we realize that the University is a microcosm—that year after year, a new throng of eager and ambitious youths will surge through these halls, will work, and play, and strive for excellence, and in turn will depart out into the larger cosmos, to be absorbed and disappear in their turn.

These generations to come cannot know Professor Lord as we have known him, nor can they receive that direct enthusiasm for the truth, for fair-dealing, for high ethical standards in engineering and for courageous public-spirited citizenship, which contact with him was always wont to inspire. But they can know him and his work to some degree and indirectly, and whatever knowledge of his life they may attain will lead securely to a higher professional competency and more devoted service to mankind. And to this task of keeping alive the memory and knowledge of his works, we have addressed ourselves.

There are two ways to perpetuate the teachings of Professor Lord. The first is by providing the

means by which such work as he loved to do, and which he did with such noteworthy success, shall be carried forward in perpetuity. In brief, we propose to create a permanent endowed scholarship in this School of Mines, to be known as the Nathaniel Wright Lord Research Scholarship, the holders of which shall devote their time to the service of the people through the study of the problems of the mineral industries. The details of this plan and the method of its administration we need not undertake to set forth at this time. As an earnest of our purpose in this matter, we have now in hand ready to turn over to the Board of Trustees, so soon as the proper legal steps can be taken, the sum of one thousand five hundred dollars.

The second way to achieve our purposes is to bring before future students some actual physical reminder of Professor Lord, which shall awaken their interest and make them desire to know of his life and work. One such material symbol has already passed into the possession of the University this morning, in the beautiful painting soon to adorn these walls. But a larger, more permanent and more adequate symbol is this building itself—and its costly and intricate equipment—this School of Mines, which Professor Lord conceived, about which he dreamed, for which he labored incessantly, and which, by his labors of a third of a century, now stands forth a permanent and efficient organization for the uplift and betterment of the mineral industry.

We have, during the year that is past, indicated to the Board of Trustees our heartfelt desire that the life work of Professor Lord should be crowned at this time with this highest mark of appreciation which this University can bestow upon it—that his name should be forever associated with the work, which he did so much to elevate and ennoble. And the Board of Trustees, sharing our sentiments, have indicated that our request would at the proper time be granted.

Acting upon that assurance, we have procured and placed upon the walls of this building, this bronze tablet. It says:

IN MEMORIAM
NATHANIEL WRIGHT LORD

For thirty-three years Professor of Metallurgy and Mineralogy, First Director of the School of Mines and First Dean of the College of Engineering.

This Tablet has been Placed by his Former Pupils in Grateful and Loving Remembrance of the Sympathetic and Inspiring Teacher, the Broad and Thorough Scholar, the Keen Investigator, the Sagacious Engineer, the Public-Spirited Citizen, the Kindly Gentleman.

And in Recognition of His Eminent Services to This Institution the Board of Trustees has Conferred Upon This Building the Name

LORD HALL

And now, we, the alumni and students of this School of Mines, beg of you, as the representative of the supreme governing body of this institution to accept this tablet, and by accepting it to confer upon this building the name Lord Hall, and to dedicate it to the uses and purposes of the School of Mines forever.

MEMORIAL

NATHANIEL WRIGHT LORD

FORTY-THREE YEAR PROFESSOR OF METALLURGY AND
MINERALOGY • FIRST DIRECTOR OF THE SCHOOL OF MINES
AND FIRST DEAN OF THE COLLEGE OF ENGINEERING •

THIS TABLET HAS BEEN PLACED BY HIS FORMER PUPILS IN GRATEFUL AND
LOVING REMEMBRANCE OF THE SYMPHETIC AND INSPIRING TEACHER THE
BROAD AND THOROUGH SCHOLAR THE KEEN INVESTIGATOR THE SAGACIOUS
ENGINEER THE PURE-SHEELED CITIZEN THE KINDLY GENITORIAN
AND IN RECOGNITION OF HIS EMINENT SERVICES TO THE INSTITUTION THE
BOARD OF TRUSTEES HAS CONFERRED UPON THIS BUILDING THE NAME

LORD HALL

ACCEPTANCE OF THE TABLET
AND DEDICATION OF THE
BUILDING

HONORABLE GUY W. MALLON,
Member of the Board of Trustees,
Cincinnati, Ohio.

THE Board of Trustees of the Ohio State University accepts as a worthy gift, in honor of a great man, whose memory we all revere and love, this tablet which will stand as a permanent record of appreciation of the character and services of Nathaniel Wright Lord.

The rewards which success brings to most men are of doubtful worth. The goal when reached, the treasure when seized, too often take on an aspect quite different from that which they presented when they loomed large and bright through the medium of earnest striving. But there is one calling and there is one profession which cannot disappoint. That calling is science, and that profession is teaching.

The man, who, with genius attuned to Nature, reverently seeks to learn her secrets, is dealing with eternal verities. And as it is more difficult as well as more blessed to give than to receive, he whose tact permits him to impart his discoveries to his pupils, has the joy of high service. The crowning reward of knowledge is his. By sharing with others his delight is manifolded.

It was the holy evening of the Sixth Day. "And God saw everything which He had made and behold it was very good."

There were prophets of old who revealed something of God's nature to those who could dream dreams when young, or see visions when old. And there are prophets of the later day who may be as close to God and perhaps closer to His creation:

among these modern prophets Professor Lord stood as an Isaiah. He knew that he could not see everything which He had made, but he gazed searchingly upon many things which are hidden from most men, and he saw some things which no other man had seen. To his everlasting praise let it be said that what he saw he could declare to his disciples.

In naming this building Lord Hall, and in dedicating it to the purposes of the School of Mines, we are mindful of the larger purpose for which he strove, mindful of the general cause to which are given in rapidly increasing measure the wealth of the State of Ohio and the devotion of her earnest men and women. *Education* commands and receives the best of Ohio's material resources and of the lives of her citizens. We may not fully define nor worthily represent this greatest of all the moving forces of the World, but we can be steady to follow those paths which we prayerfully hope will lead us to the light and will bring to the youth committed to our care a fuller measure of the knowledge of truth.

Can we not agree with both the sanest of the ancient philosopher—teachers and the wisest of modern educators? Epicurus said that education is "friends seeking happiness together." President Eliot said: "The prime object of a man's education is to expand his intelligence, to enrich his imagination, to introduce him to all the best human types both of the past and of the present, to give him the

key to all knowledge, to fill him with awe and to inspire him with hope and love."

Therefore, by virtue of the power conferred upon me by resolution of the Board of Trustees, passed at its meeting held June 10th, 1912, and pursuant thereto, I confer upon this building the name *Lord Hall*, and dedicate it to the purposes of the School of Mines.



APPENDIXES

MEMORIAL

(The University Faculty in special session, May 24, 1911,
adopted the following memorial)

NATHANIEL WRIGHT LORD, born at Cincinnati, Ohio, December 26th, 1854, sprang from a notable ancestry. His father was Henry Clark Lord, a man prominent in the business and political life of his time, and son of Nathan Lord, for many years President of Dartmouth College; his mother, Eliza Burnet Wright, a woman of rare vigor and ability.

Professor Lord's education was begun in the public schools of his native city, and their training, developed by a year of searching review under an exacting foreign tutor of rare gifts, was enlivened by frequent boyish forays into fields of natural history. Hence, the rigorous course in mining engineering taken 1872-76 at Columbia College School of Mines, caused him no difficulty. Next came a year of hardship in Central American mining, which nearly cost him his life. Upon his return and recovery the young engineer was appointed, November 6th, 1878, State Analyst at this University. On June 18th, 1879, the Department of Mining and Metallurgy was entrusted to him, and remained under his control until the end of his life.

Professor Lord's professional career was largely developed in the service of this institution. His earliest engineering experience as the chemist and

technical director of a Gold Mining Company in Nicaragua, though it had been of great service in developing his power and self-confidence in the application of science to engineering, yet had given him little reputation. In the new position his ability and energy were soon recognized. He became in 1883, chemist of the Geological Survey of Ohio, contributing in addition to his chemical reports, valuable chapters on the iron industry and on the differentiation of the coal seams of the state by novel methods. His grasp of these subjects was so masterly that he became a national authority on fuels and fuel testing, and for the past eight years has been chief chemist or consulting expert of the Technologic Branch of the United States Geological Survey, now the United States Bureau of Mines.

Upon the College of Engineering, Professor Lord has left an enduring mark. As its first Dean, beginning in 1896, he carried it through its formative period, and left it with policies and ideas well crystallized. His sane and practical mind rejected instantly everything that savored of show or pretense. As in his engineering, so every educational plan must rest upon a solid foundation. His constant struggle was to ground his students thoroughly—well assured that upon such a foundation they would erect a secure superstructure. His teaching was a constant appeal to the reason, and to the constructive imagination. To see him with a class attack a problem new to both, was a rare experience.

Combined with his power and inspiration as a teacher, was his pre-eminent ability as an investigator. The training of the chemical laboratory, where everything must be accounted for, gave to his naturally incisive thinking processes, a precision and analytical power most unusual. No man could with more unerring certainty, strip a complicated problem of its disguises and lay bare its fundamental principles. No field of science upon which he touched failed to profit in some enduring way from his ever active mind.

No man could associate with him in any capacity without admiring him. His large mind and generous spirit had no room for anything little or sordid. Creditable, useful, even brilliant, as many of his contributions to science and engineering have been, his influence on his students and on his colleagues is the signal proof of his greatness.

To the very last he was a man of diversified interests and continually entered upon new pursuits with characteristic enthusiasm.

Professor Lord was a man of marked intellectual vigor. His mind was no less judicial than analytical. He thought clearly and spoke with logical precision. In action, he was prompt, decided and fearless. His moral convictions rested upon reason rather than upon authority or tradition.

With the reserve of a gentleman who permitted no undue familiarity, he yet remained essentially democratic, and no one felt humbled in his presence. Honesty was fearless before him. To those who won his confidence, he was a loyal friend and a wise counsellor.

In the death of Professor Lord this Faculty mourn the loss, not merely of their colleague of longest unbroken service, but of the brilliant man of science, the incisive and powerful teacher, the keen yet broad-minded counsellor, the vigilant and strong supporter of the University, the loyal citizen, delightful companion and generous friend, the man of rare quality, originality and broad interest, whose place in the hearts of those who knew him intimately, can never be filled.

(SIGNED) S. C. DERBY,
WILLIAM R. LAZENBY,
EDWARD ORTON, JR.

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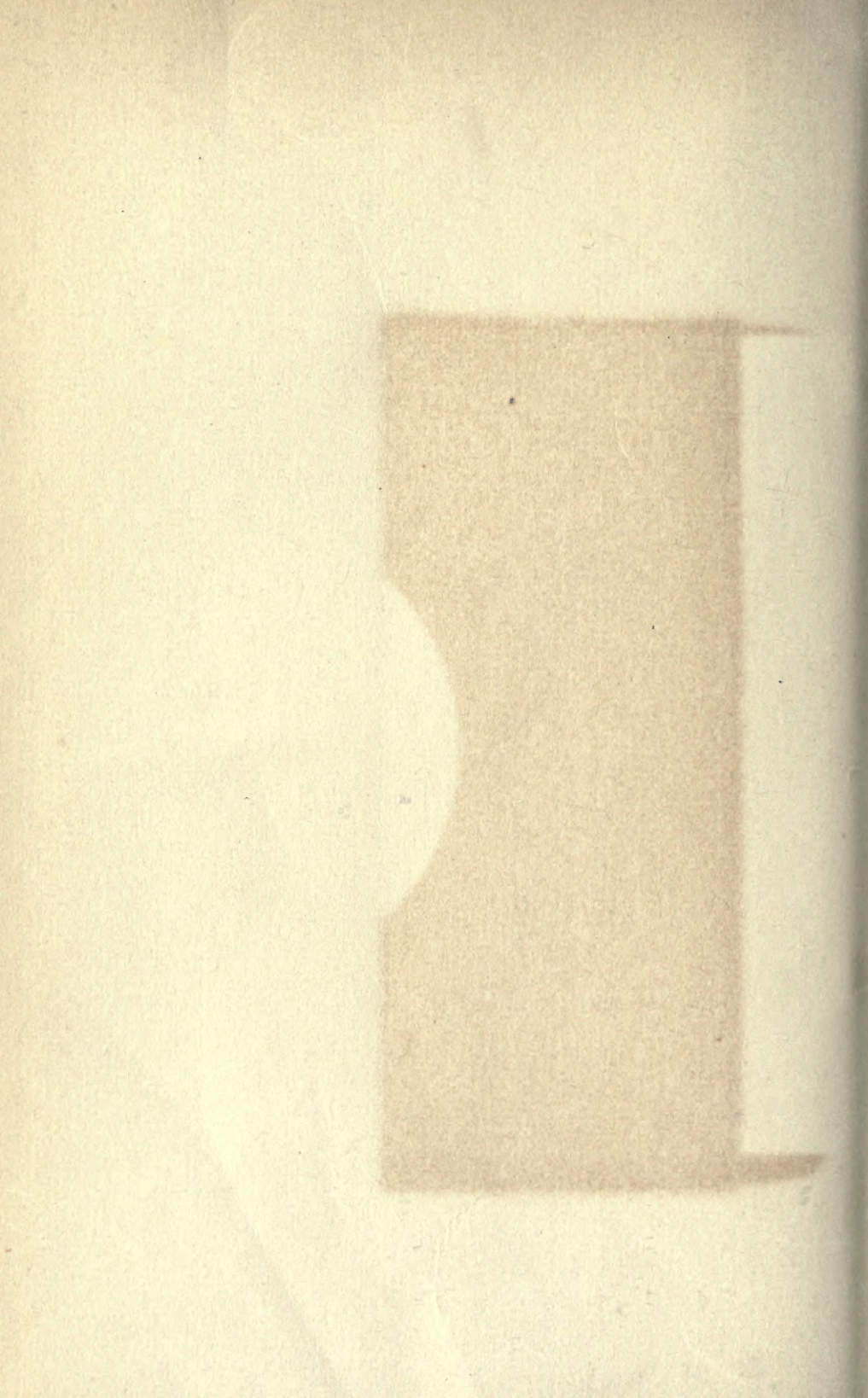
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Author

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